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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/287,602	04/07/1999	DONG-SOO KIM	5480-00200	6496
35617	7590	11/19/2003	EXAMINER	
CONLEY ROSE, P.C. P.O. BOX 684908 AUSTIN, TX 78768			TRAN, HIEN THI	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/287,602	Applicant(s) KIM, DONG-SOO	
	Examiner Hien Tran	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/22/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Holst et al (5,955,037).

With regard to claim 7, Holst et al discloses a gas scrubber (referred to, for example, Figs. 10, 13) comprising:

a combustion chamber 682;

a wetting chamber 696 placed below said combustion chamber 682 to form a single unit;

a guide plate (lower portion of conduit 684 which connects the combustion chamber/oxidation unit 682 and the wetting chamber 696) arranged between the combustion chamber 682 and the wetting chamber 696 for directing a gas from the combustion chamber 682 into the wetting chamber 696; and

an injection nozzle having an opening 1022, 1050 adapted to deliver a conditioned gas from a gas source 1004, 1005 to a space proximate to the guide plate for minimizing the production and/or accumulation of a powder at an interface between the combustion chamber 682 and the wetting chamber 696 (Fig. 13, col. 24, line 33 to col. 26, line 64).

Holst et al further discloses that the combustion chamber is adapted to burn flammable elements of the gas (col. 1, lines 9-66; col. 30, lines 11-18).

With respect to the newly cited water jacket, Holst et al discloses that the interface structures may be gas/liquid interface structures (cooling jacket) 690 with liquid 692 as in Fig. 10 or the water jacket 1032 with water 1003 as in Fig. 13.

Instant claim 7 structurally reads on the apparatus of Holst et al.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1-3, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holst et al (5,955,037) in view of Kim (Korean Patent Publication 97-9311 published June 10, 1997, English translation supplied).

With regard to claim 1, Holst et al discloses a gas scrubber (referred to, for example, Figs. 10, 13) comprising:

- a combustion chamber 682;
- a wetting chamber 696 placed below said combustion chamber 682 to form a single unit;
- a guide plate (lower portion of conduit 684 which connects the combustion chamber/oxidation unit 682 and the wetting chamber 696) arranged between the combustion chamber 682 and the wetting chamber 696 for directing a gas from the combustion chamber 682 into the wetting chamber 696; and

an injection nozzle having an opening 1022, 1050 adapted to deliver a conditioned gas from a gas source 1004, 1005 to a space proximate to the guide plate for minimizing the production and/or accumulation of a powder at an interface between the combustion chamber 682 and the wetting chamber 696 (Fig. 13, col. 24, line 33 to col. 26, line 64).

With regard to claim 2, Holst et al discloses that the combustion chamber is adapted to burn flammable elements of the gas (col. 1, lines 9-66; col. 30, lines 11-18).

With regard to claim 3, Holst et al discloses that the wetting chamber adapted to receive water from water source 702.

The apparatus of Holst et al is substantially the same as that of the instant claims, but fails to disclose the specific shape of the guide plate.

However, Kim discloses provision of a guide plate in a funnel shape.

Note that the shape of guide plate is not considered to confer patentability to the claim. It would have been an obvious matter of design choice to alternately select another shape for the guide plate, such as the funnel shape as taught by Kim in the apparatus of Holst et al, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art, absence showing any unexpected results. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

With regard to claim 6, Kim discloses a wetting chamber having a plurality of absorbers 56-62 installed in a region interior to a plurality of partitions 42-45, a water nozzle 52 having an opening directed to the angled bottom for flushing the particulates into a drain, a shower nozzle 47.

It would have been obvious to one having ordinary skill in the art to provide more than one absorber in the wetting chamber as taught by Kim in the apparatus of Holst et al for a more effective absorption thereof and since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

6. Claims 1-13, 15-18, 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (Korean Patent Publication 97-9311 published June 10, 1997, English translation supplied) in view of Holst et al (5,955,037).

With regard to claims 1, 7, 21, Kim discloses a gas scrubber comprising:

a combustion chamber 10;
a wetting chamber 40; and
a guide plate 55 arranged between the combustion chamber and the wetting chamber for directing a gas from the combustion chamber 10 into the wetting chamber 40 (Fig. 3).

Kim fails to disclose the injection nozzle.

However, Holst et al shows the conventionality of providing a gas/gas interface structures comprising an injection nozzle having an opening 1022, 1050 adapted to deliver a conditioned gas to a space proximate to the guide plate for minimizing the production and/or accumulation of a powder at an interface between the combustion chamber 682 and the wetting chamber 696 (Fig. 13, col. 24, line 33 to col. 26, line 64).

At the time of the invention was made, it would have been obvious to one skilled in the art to provide an injection nozzle in the apparatus of Kim so as to minimize the production and/or accumulation of a powder at an interface between the combustion chamber and the wetting chamber as taught by Holst et al, and since the use of such is conventional in the art and no cause for patentability here.

With regard to claims 2, 7, Kim discloses a combustion chamber 10 adapted to burn flammable elements of the gas (page 3, lines 12-19).

With regard to claim 3, Kim discloses that the wetting chamber 40 is adapted to receive water (page 5, line 24 - page 6, line 7).

With regard to claim 4, Kim discloses that the wetting chamber 40 having an angled bottom surface, a drain valve 50 and a water nozzle 52 having an opening directed to the angled bottom for flushing the particulates into a drain 54.

With regard to claim 5, Kim discloses that the wetting chamber having a plurality of absorbers 56-62 and the exhaust gas is led out of to an exhaust pipe after the gas is passed across the absorbers.

With regard to claims 6, 15, Kim discloses a wetting chamber having a plurality of absorbers 56-62 installed in a region interior to a plurality of partitions 42-45, a water nozzle 52 having an opening directed to the angled bottom for flushing the particulates into a drain, a shower nozzle 47.

With respect to claim 7, Holst et al discloses that the interface structures may be gas/liquid interface structures (cooling jacket) 692 and therefore the use of cooling jackets to cool flowing fluids is well-known in the art as evidenced by Holst et al.

With regard to claim 8, Kim discloses that the combustion chamber comprises a case (Figs. 1-2) connected to receive the gas intake 22 and an air intake 24 and heating means 13 placed inside the case for applying heat to the gas flowing into the case from the gas intake.

With regard to claim 9, Kim discloses multiple electrical heating elements 13 placed inside the ceramic (Inconel or titanium) case 12 (page 3, line 22; page 5, lines 3-18). At the time of the invention was made, it would have been obvious to one skilled in the art to place the heating element inside a ceramic casing for a greater temperature control. This use of ceramics is well known in the art. Holst et al discloses the gas/gas interface structures may be used in any pipings, conduits or fluid contacting structure in the treatment system upstream or downstream of the heating chamber thereof for minimizing the production and/or accumulation of a powder thereon (col. 24, lines 33-65).

It would have been obvious to one having ordinary skill in the art to place the cleaning air nozzles for periodically cleaning the casings containing the heat exchange units 13 in the apparatus of Kim so as to minimize the production and/or accumulation of a powder on the casing as taught by Holst et al, and since the use of such is conventional in the art and no cause for patentability here.

With regard to claim 10, Kim discloses that the electric heater is spaced from the ceramic casing 12 (Fig. 3). The space therebetween is considered an insulator. If not, then it would have been obvious to modify the modified apparatus of Kim by placing an insulator between the electric heater and the casing to prevent an electrical short circuit.

With regard to claim 11, Kim discloses Inconel for use as a heater housing (page 3 line 21; page 5, lines 14-16).

With regard to claims 12, 22, Holst et al discloses a nitrogen delivery nozzle 674. It would have been obvious to one skilled in the art to protect electrical connections located in a corrosive atmosphere by replacing the atmosphere with one that is noncorrosive as evidenced by Holst et al.

With regard to claim 13, Kim discloses a plurality of heat exchange units arranged in row. The manner of connecting and operating the heating units would have been obvious to one skilled in the art. No unexpected effect has been shown to result from this obvious attempt to maintain a fixed amount of heating in the apparatus, regardless of the number of heaters employed.

With regard to claims 16 and 17, Kim discloses a gas scrubber with a v-shaped bottom (3). Kim discloses a sensor that monitors the water level and initiates a water nozzle to inject water to push the sludge out.

With regard to claim 18, it would be obvious to maintain a particular pressure by means of sensors and valves.

With regard to claim 20, it is well known in the art to coat surfaces subject to chemical reaction with PTFE (Teflon) to prevent such reactions.

With regard to claim 21, Kim discloses a guide plate having the square funnel shape 55 configured to guide the gas from the combustion chamber to the wetting chamber. Holst et al discloses the injection nozzle 1022, 1050 to inject conditioned gas to the guide plate for removing powder therefrom. Providing each injection at each side of the square funnel shape guide plate is within the purview of one having ordinary skill in the art during routine experimentation and optimization of the system so as to achieve the benefit attendant therewith.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (Korean Patent Publication 97-9311 published June 10, 1997, English translation supplied) in view of Holst et al (5,955,037) as applied to claims 1-18, 20-21 above and further in view of Hartung et al (5,900,217).

With regard to claim 19, Hartung et al discloses means 21 for viewing the interior of the apparatus. It would have been obvious to use a window of Hartung et al in the modified apparatus of Kim for that purpose as well.

Response to Arguments

8. Applicant's arguments filed 8/22/03 have been fully considered but they are not persuasive.

Applicant argues that Holst et al does not teach a guide plate having a funnel shape arranged between the combustion chamber and the wetting chamber and an injection nozzle directly coupled to the guide plate and adapted to delivery a conditioned gas for minimizing the production and/or accumulation of a powder on a surface of the guide plate. Such contention is not persuasive as Holst et al does teach a guide plate arranged between the combustion chamber and the wetting chamber and an injection nozzle directly coupled to the guide plate and adapted to delivery a conditioned gas for minimizing the production and/or accumulation of a powder on a surface of the guide plate (Figs. 10, 13, col. 24, line 33 to col. 26, line 64). Holst et al is silent as to whether the guide plate may have a funnel shape. However, the introduction of Kim overcomes such argument (refer to the rejection set forth above). Note that the portion of the passage after the combustion chamber 682 is considered a guide plate since it connects the outlet of the combustion chamber 682 to the inlet of the wetting chamber 696. That portion is equipped with a gas/liquid interface structure as shown in Fig. 13.

Applicant argues that the inlet ports 1022 and 1050 are coupled to the upper portion 1008, not directly coupled to the lower portion of the conduit 684/lower portion 1030. Such contention is not persuasive as the portion of conduit 684 that is considered as guide plate, includes both upper and lower parts 1008 and 1030.

Applicant argues that Holst et al does not disclose a water jacket on a gas intake. Such contention is not persuasive as Holst et al discloses the conventionality of providing water from

the water source 1003 to the water jacket 1030 at the gas inlet (Fig. 13). Note that Holst et al discloses that the interface structures may be gas/liquid interface structures (cooling jacket) 692 and therefore the use of cooling jackets to cool flowing fluids is well-known in the art as evidenced by Holst et al.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Kim discloses all of the structural elements recited in the claims, except for the injection nozzle in the guide plate at the inlet of the wetting chamber. Holst et al discloses provision of a gas/gas interface structures in the guide plate at the inlet of the wetting chamber which comprises an injection nozzle having an opening 1022, 1050 adapted to deliver a conditioned gas to a space proximate to the guide plate for minimizing the production and/or accumulation of a powder at an interface between the combustion chamber 682 and the wetting chamber 696 (Fig. 13, col. 24, line 33 to col. 26, line 64).

At the time of the invention was made, it would have been obvious to one skilled in the art to provide an injection nozzle in the apparatus of Kim so as to minimize the production and/or accumulation of a powder at an interface between the combustion chamber and the wetting chamber as taught by Holst et al, and since the use of such is conventional in the art and no cause for patentability here.

Note that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (703) 308-4253 **. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (703) 308-6824. The fax phone numbers for the

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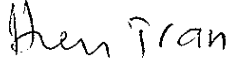
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organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.

***As of December 10, 2003, the telephone number will be changed to 571-272-1454.*

HT
November 17, 2003


Hien Tran
Primary Examiner
Art Unit 1764